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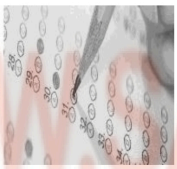

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PHYSICS NMDCAT

TOPIC WISE TEST (UNIT–1)

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TOPICS:

✓ **Force and Motion**

Q. 1 **If distance covered is zero. The displacement**

A. Must be zero
B. May or may not be zero
C. Cannot be zero
D. Depend upon body

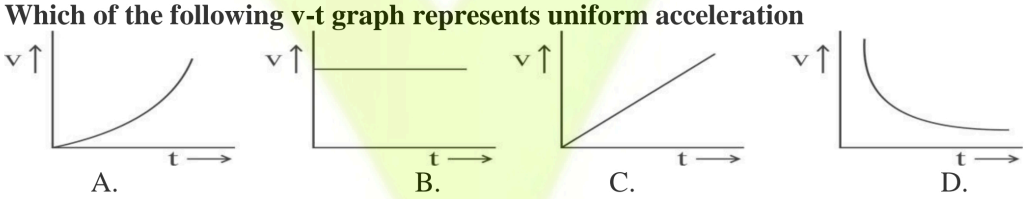
Q. 2 **An athlete complete half a round of a circular track of radius R. The displacement covered is**

A. R
B. 2R
C. $\sqrt{2}R$
D. Zero

Q. 3 **A particle moves with uniform velocity. Its**

A. Speed is zero
B. Acceleration is zero
C. Opposite to velocity
D. Speed is variable

Q. 4 **Which of the following v-t graph represents uniform acceleration**



A. B. C. D.

Q. 5 **The slope of v-t graph for uniform velocity is**

A. 0
B. Negative
C. Positive
D. Positive or negative

Q. 6 **A force of 5 N acts on a body of weight 9.8 N. What is the accelerations produced in m sec^{-2}**

A. 0.51
B. 49.00
C. 1.46
D. 5.00

Q. 7 **When projectile is projected in XY-plane makes an angle θ with x-axis then v_y**

A. Remains same
B. Goes on decreasing with height
C. Goes on increasing with height
D. First increases then decreases

Q. 8 **If R is the max range of projectile then greatest height attained is**

A. R
B. $\frac{R}{4}$
C. R/2
D. 2R

Q. 9 **A stone is released from moving train the stone will follow**

A. Hyperbolic path
B. Straight path
C. Parabolic path
D. Circular path

Q. 10 **Range of projectile at 30° is R. At what angle R will be same?**

A. 60°
B. 45°
C. 50°
D. 20°

Q. 11 **A person can throw a stone to maximum distance of 80m the greatest height to which he can throw the stone is**

A. 100 m
B. 50 m
C. 80 m
D. 20 m

Q. 12 **An aeroplane moving horizontally with 50 ms^{-1} drops a packet at 490 m height. Its time of flight is**

A. 50 sec
B. 10 sec
C. 40 sec
D. 20 sec

Q. 13 If the time of flight of projectile is doubled its height becomes

A. Doubled
B. 4times
C. Unchanged
D. Halved

Q. 14 At the top of trajectory in projectile motion angle between v and acceleration is

A. 90°
B. 60°
C. 0°
D. 180°

Q. 15 When a body is stationary

A. There is no force acting
B. Net force is zero
C. Body is in vacuum
D. Force is less than weight

Q. 16 Force bear by wall on which water strike normally at speed of 10 m sec^{-1} and at a discharge .0001 m^3/sec is

A. 1 N
B. 100 N
C. 10 N
D. 1000 N

Q. 17 A stationary object explodes into two pieces of masses m_1 and m_2 with velocities V_1 and V_2 the ratio of $(K.E)_1 / (K.E)_2$ is

A. 1
B. $\frac{m_2}{m_1}$
C. m_1 / m_2
D. $\frac{m_1 + m_2}{m_1 m_2}$

Q. 18 A body of momentum mv collides with a wall elastically its change in momentum is

A. mv
B. 0
C. –2 mv
D. mv

Q. 19 Which law of motion is called law of inertia?

A. 1st
B. 3rd
C. 2nd
D. Law of gravitation

Q. 20 With the help of V–t graph we can find

A. Acceleration
B. Force
C. Distance
D. Both A and B

Q. 21 Rate of change of_____ is known as velocity

A. Distance
B. Displacement
C. Speed
D. Momentum

Q. 22 In uniform accelerated motion slope of V-t graph is equal to_____ acceleration

A. Uniform
B. Average
C. Instantaneous
D. All of these

Q. 23 For long range and greater precision_____ missile are used

A. Powered
B. Powered and guided missile are used
C. Remote control guided
D. Unpowered missile are used

Q. 24 No body begin to move or comes to rest itself is statement of

A. Newton
B. Maxwell
C. Abu Ali Sena
D. Planck's

Q. 25 K.E of projectile at highest point is half of its initial K.E angle of projection is

A. 30°
B. 45°
C. 60°
D. none

Q. 26 As shown in the figure a particle moves from 0 to A, and then A to B. Find path length (distance) and displacement.

A. 8m, -2m
B. 2m, -2m
C. 8m, -8m
D. 2m, 2m

Q. 27 The displacement time graph of a particle moving with uniform velocity is

A. Parabola
B. Straight line
C. Circle
D. Hyperbda

Q. 28 The ratio of distance to displacement along a semi circle of radius r is

A. 2π
B. π

C. $\pi/2$ D. none of these

Q. 29 The displacement time graph for two bodies A and B are straight these inclined at 60^o and 30^o to time axis. Find ratio of their speed is

A. 3 : 1 B. $\sqrt{3}$:1

C. 1 : 3 D. 1: $\sqrt{3}$

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Q. 30 An athlete completes one round of a circular track of radius R in 40sec what will be displacement at the end of 1minute.

A. O B. 2R
C. R D. 3πR

Q. 31 The velocity time graph are inclined at 30^o and 45^o with time axis. The ratio of their acceleration

A. $\sqrt{3}:2$ B. $\sqrt{3}:1$
C. $1:\sqrt{3}$ D. none

Q. 32 The ratio of range and height at 45^o is

A. 1 : 4 B. 1 : 2
C. 4 : 1 D. 2 : 1

Q. 33 In projectile motion if air resistance is ignored the horizontal motion is with

A. Constant velocity B. Variable velocity
C. Constant acceleration D. Constant retardation

Q. 34 A force of 10 N acts on a body for 5 sec. What will be the change in momentum

A. 10 N.s B. 50 N.s
C. 5 N.s D. 100 N.s

Q. 35 If a body starts from a point, and returns back to the same point, then its

A. Average velocity is zero but not average speed
B. Average speed is zero but not average velocity
C. Average velocity is zero but not average velocity
D. Both average and velocity are zero

Q. 36 A person walks along a straight road for the first half time with velocity v_1 and second half time with velocity v_2. Then mean velocity v is given by

A. $\frac{v_1+v_2}{2}$ B. $\frac{2v_1v_2}{v_1+v_2}$
C. $\frac{\vec{v_1}+\left(-\vec{v_2}\right)}{4}$ D. $\sqrt{v_1v_2}$

Q. 37 A body is thrown upwards and reaches its maximum height. At that position

A. Its acceleration is minimum
B. Its velocity is zero but its accelerations is maximum
C. Its velocity is and accelerations zero
D. Its velocity is zero but its acceleration is accelerations due to gravity

Q. 38 A particle goes from point A to B in 1.0s. It is moving in a semicircle of radius 1.0m. The magnitude of average velocity is

A. 3.14 m/s B. 1.9 m/s
C. 2.0 m/s D. zero

Q. 39 At the highest point, the velocity of projectile is

A. Maximum B. Minimum
C. Zero D. Equal to half of x – component of velocity

Q. 40 Change in momentum is called

A. Moment of force B. Force
C. Torque D. Impulse

Q. 41 Newton's 2^{nd} law of motion establishes relationship between:

A. Force and acceleration B. Mass and force
C. Mass and velocity D. Acceleration and mass

Q. 42 A player throws a ball at an angle θ with the horizontal, the height is maximum when θ is equal to

A. 0^o B. 45
C. 30^o D. 90^o

Q. 43 Direction of motion of projectile at maximum height is

A. Horizontal B. Vertical
C. Any direction D. No direction

Q. 44 If $R = \frac{R_{max}}{2}$ then angle of projection is

A. 30^o B. 60^o
C. 15^o D. none

Q. 45 If a tennis ball moving with velocity 15 ms^{-1} collides elastically with a wall then velocity of tennis ball after collision will be_____

A. 15 ms^{-1} B. 30 ms^{-1}
C. –15 ms^{-1} D. –30 ms^{-1}

Q. 46 A 70 g ball collides with another ball of mass 140 g. The initial velocity of the first ball is 9 ms^{-1} to the right while the second ball is at rest. If the collision were perfectly elastic; what would be the velocity of the two balls in ms^{-1} after the collision?

A. –3, 6 B. 6, –3
C. 3, 7 D. –7, 3

Q. 47 In elastic collision, when a massive body collides with light body at conditions $m_1 >> m_2$ and $v_2 = 0$ ms^{-1}, then the change in velocity will be written as:

A. $v_1' \approx -v_1$; $v_2' \approx v_1$ B. $v_1' \approx v_1$; $v_2' \approx 2v_1$
C. $v_1' \approx v_1$; $v_2' \approx 0$ D. $v_1' \approx -v_1$; $v_2' \approx 0$

Q. 48 A force of 5N acts on a body of 5kg for 5 sec. The rate of change of momentum is

A. 25N B. 5 N
C. 50 N D. 125 N

Q. 49 If a force of 12N is applied on a body and its momentum is changed from 60 $kgms^{-1}$ to 36 kg ms^{-1}, then find the time during, which this force acts:

A. 1 second B. 12 seconds
C. 2 seconds D. 24 seconds

Q. 50 If the velocity of the body changes by equal amount in equal intervals of time, the body is said to have:

A. variable acceleration B. uniform velocity
C. uniform acceleration D. negative acceleration

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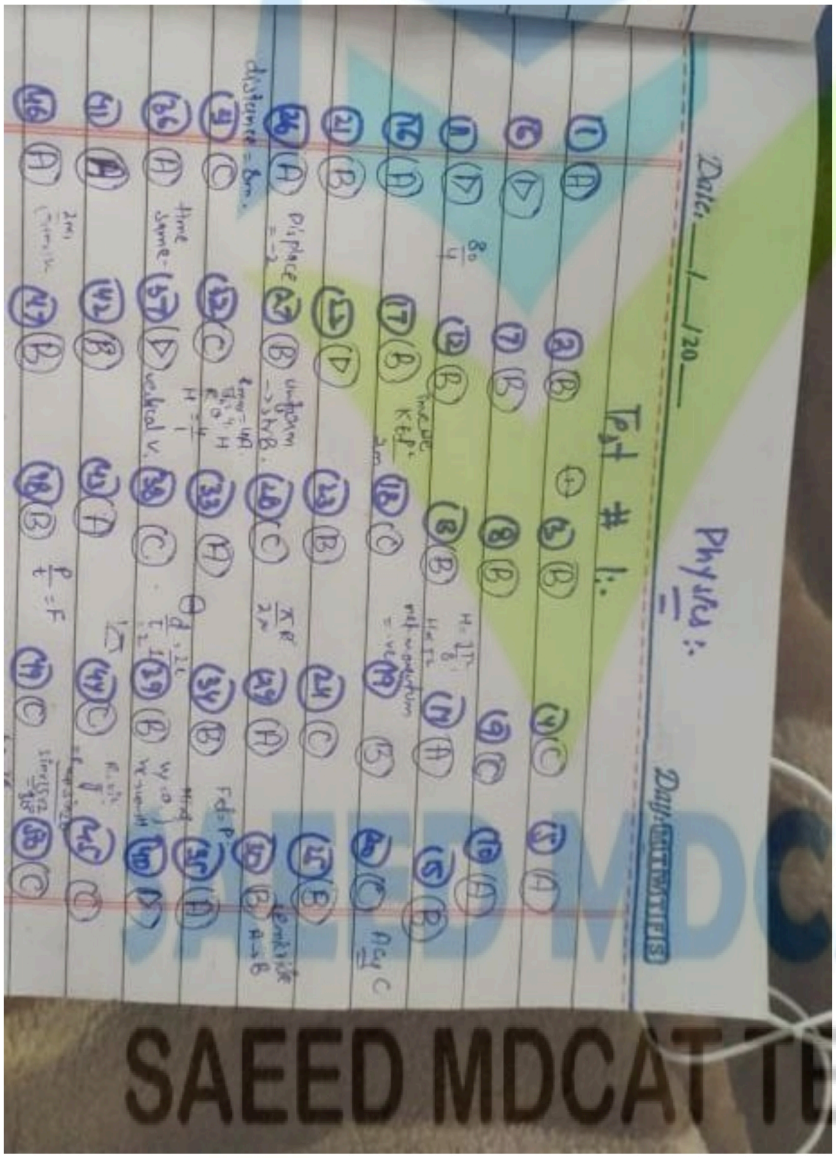

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